

## PATENT CLAIMS

1. **Turbo-jet pump - water-jet engine** is a new type of driving vessels, characterized by constituent parts: cylindrical housing (1) which at the jet output transforms into the Venture's tube (16), suction pipe (2), water deflectors (3 and 15), driving asynchronous electric motor consisting of a shaft (8), short-circuit rotor (9), rotor and stator windings (10) with bearings in the covers (11) and compressible pressure seals (6), driven by three phase electric current of high voltage, ranging from 1kV up to 10 kV and higher operating frequency of 100 Hz or more, operating axial circuits (rotors) of the pump ( 5 front and 13 rear), the input rotor pre-circuit (4), the output rotor post-circuit (14), both of which are fixed to the housing and hold a water deflector (3 and 15), the input rotor post-circuit (7), the output rotor pre-circuit (12), both of which are fixed to the housing and at the same time they hold the electric motor with pump rotors, rotor and stator blades (pre-circuit and post-circuit) of the pump which has a standard inclined cross-section or with plane axis-symmetrical blades with elliptical cross-section (25), dimensioned so as to provide for the highest ratio of water discharge, slightly above the value of the critical pressure at which the cavitations appears at any discharge (I – XI) and to provide for slightly higher discharge head of the pump to beat incidental and local resistance, to obtain the maximum water discharge and velocity for the given electric motor power along with the highest efficiency, with adding an armour (17) around the housing and the sieve (18) onto the pump suction pipe, as a protection against mechanical impurities which might penetrate into the pump circuits, when the pump is installed onto the vessel side.

2. **Turbo-jet pump - water-jet engine**, as per patent request 1, is characterized by the pump operating circuits for a double-acting jet consisting of a rotor (24), blades with axis-symmetrical elliptic cross-section (25), with the ratio of the ellipse semi-axis  $a : b$  from 8 : 1 to 20 : 1 or more with very high powers and number of revolutions, that is the blade thickness  $\delta$  is 8 to 20 times, or more, less than the blade length  $l$ , and the ring (26) connecting the blade tops.

3. **Turbo-jet pump - water-jet engine**, variant solution I, as per patent request 1, characterized by the Venture's tube (16) at both sides of the housing, so that, depending on the rotor revolution direction, it can be either the suction pipe or the nozzle, and the blades on the pump rotor and stator (pre-circuit and post-circuit) are plane, axis-symmetrical and of elliptical cross-section (25) placed radially or at a certain angle to the radial direction and at  $\beta$  angle to the revolution axis, that is the sieve inclination.

**4. Turbo-jet pump - water-jet engine, variant solution II**, as per patent request 1, characterized with that the pump is driven through a shaft (19) operated from the internal part of the vessel and axially placed at the suction pipe side, and connected to the pump shaft (8) by a coupling (20), and the whole pump is connected to the rear (stern) side of the vessel by the housing and adequate levers.

**5. Turbo-jet pump - water-jet engine, variant solution III**, as per patent request 1, characterized with that the pump is driven through a shaft (22) driven from the internal part of the vessel, radially placed between the pump input and output rotors, and it conveys the power to the pump shaft (8) via conical gears or differential gear, and from the shaft to the pump rotors, and the whole pump is mounted to the vessel's stern side by the housing and adequate levers.